

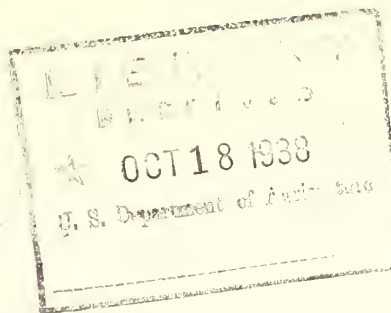
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## ARTIFICIAL INSEMINATION OF CHICKENS AND TURKEYS

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The artificial insemination of birds consists of two procedures; one is the obtaining of semen from the males and the other the actual insemination of the females. The equipment necessary to carry on the work consists of a receiving container, a syringe, and a test tube. The receiving container is a small glass funnel about 2 inches across the top with its stem cut to 1 1/2 inches in length, plugged with paraffin and thrust through a cork or rubber stopper. The cork or stopper should not be more than 1 1/2 inches in diameter. The syringe is the standard, 1-cubic-centimeter tuberculin syringe commonly sold at drug stores for use in treatment of diabetes. (The syringe is used without needle). The test tube should not be more than 4 inches long so that the syringe will reach the bottom for withdrawing its contents. It should be about 1/2 to 3/4 inch in diameter.

Method of obtaining semen. Males, either chickens or turkeys, must be separated from hens for at least two days before semen can be obtained with any certainty. In obtaining semen, the copulatory organ is caused to protrude slightly from the vent by a rapid massage of the soft part of the abdomen. By taking hold deeply from above the vent with the thumb and forefinger and forcing the copulatory organ outward, semen is "milked" out. Continued rapid massage causes the bird to go through an ejaculatory response which refills the ducts for repeated "milking".

The method is best handled by two operators. One operator holds the bird loosely by the thighs, supporting as much weight as possible by extending his fingers under the breast. It is very important that the bird be held loosely as rigid gripping greatly hinders the desired reactions. The rear of the bird is toward the second operator, its legs slightly spread so that the abdomen is well exposed. The second operator massages the soft part of the abdomen with rapid movements of his right hand while forcing the tail of the bird upward over its back with the heel of his left hand. The thumb and forefinger of the left hand are held ready to take hold of the vent from above and force the copulatory organ outward.

In the original method it was customary to massage the bird until an ejaculatory response was obtained, at which time semen would be ejected. This was found to be unsatisfactory because defecation sometimes occurred, soiling the sample, and because of difficulty in obtaining the response in some of the birds. Therefore, the copulatory organ is forced outward with a slow milking manipulation as soon as it can be seen protruding from the vent, and the semen milked into the receiving container which is held in the right hand. This container is small enough to be held in the crook of the forefinger, leaving the thumb and other fingers free to do the massaging.

After the semen has been milked from the ducts of the copulatory organ, the massage is continued until an ejaculatory response has been obtained whenever this is possible. If the ducts have been well milked out, no semen will be ejected during the ejaculatory response, but the reaction will refill the ducts for the next milking. Also, this ejaculatory reaction aids considerably in training the bird, which becomes more sensitive to the stimulation. Each bird may be milked from two to six times at each operation, or as long as semen can be obtained from the ducts. In the turkey the attempt to obtain an ejaculatory response is not necessary.

The chicken will usually produce from 0.2 to 2.0 c c of semen once a day, and the turkey from 0.1 to 0.8 c c of semen once a day. Nothing is gained by attempting to collect oftener than once a day. An occasional male is found which will not produce any semen.

There is a considerable difference in the ease with which semen can be obtained from different birds. In learning the technique, it is well to try a number of birds until one is found which responds readily. After learning the technique on such a bird the work with the others will be easier.

The semen of the chicken is an even white in color. Contamination with feces is obvious, when it occurs, because of discoloration, but contamination with urine may not be so obvious. Urine sometimes leaks from the vent in the form of a clear sticky fluid. Any stringiness of the sample is proof of contamination with urine. It is advisable to transfer the semen from each male, as collected, from the receiving container to the test tube so that accidental contamination, if it occurs, will ruin but one sample. All contaminated samples should be discarded. Small white or creamy flecks or urates cannot be entirely avoided and are not cause for discarding a sample. These apparently do no harm, either to fertility or to the health of the hen.

The semen of the turkey is creamy in color, quite thick and sticky. It dries so rapidly upon exposure to the air that it must be taken up with the syringe as soon as possible after collecting. Care must be taken to avoid air bubbles as much as possible. When the syringe is full, the semen is used directly from the syringe. Any attempt to collect a tube full of semen before using it, as is done with chickens, will result in considerable loss from drying.

The appearance of a trace of blood at the end of the first few milkings of a bird is no cause for alarm. This may occur quite frequently even when the milking is done with extreme gentleness. It is a signal to cease operations on the bird for the day. Some birds never show this tendency to bleed and those that do lose the tendency in a few days. No permanent harm appears to result from the bleeding.



### The Technique of Artificial Insemination of Hens.

The technique of artificial insemination of hens consists in exposure of the oviduct and injection of semen directly into the uterus. The chicken hen is held with the left hand under the breast, the forefinger between the legs, and the thumb and other fingers around the outside of the legs. The loose skin of the abdomen is grasped in the tips of the left fingers pulling the feathers downward from the vent and forcing the abdominal contents into as small a space as possible. If this is properly done the vent will protrude slightly. The right hand is placed above the vent with the thumb and forefinger extending downward on each side of the vent. The hen's tail is forced upward over her back with the heel of the right hand. With the hands in this position, a sudden pressure between the hands will cause the oviduct to be everted as it is in normal mating. It will be found that the sooner this whole procedure is carried out after the hen has been picked up, the easier it will be to evert the oviduct.

When the oviduct is fully everted so that its orifice can be plainly seen, the syringe -- which has been filled with semen -- is entered as far as it will slide easily, about 2 inches. Before the injection is started, the pressure on the abdomen is fully released. A light pushing pressure is maintained on the syringe while the abdomen is being released so that the syringe will follow the retraction of the oviduct into the hen. About  $1/3$  of the length of the syringe is out of sight when the oviduct is fully retracted. The desired amount of semen, usually 0.1 c c , is then injected.

The calibrations on the syringe cannot all be read while injecting because of the one-third which is out of sight. To remedy this the calibrations are transferred to the plunger with a lead pencil. The syringe is filled with water to the 1-c c mark and the finger placed over the end of the syringe. The plunger is revolved against the sharp point of the pencil until a mark is drawn around it where it enters the barrel. An amount of water equivalent to the injection desired (usually 0.1 c c ) is expressed from the syringe and another mark made. This is repeated until the entire length of the plunger is marked. Injections can then be made from the marks on the plunger which will be accurate enough for all practical purposes.

The turkey hen is handled a little differently on account of its size. The operator picks the hen up with her head toward him. He then stoops slightly and thrusts her head between his legs. The breast of the bird rests on the sloping lap. The legs are held in the right hand until the left hand is in position on the abdomen. The legs are then released and the right hand is placed above the vent with the thumb and fingers extending downward on each side of the vent as with the chicken. The left hand gathers up the loose skin of the abdomen as with the chicken and the two hands are then used to bring a sudden pressure between the keel and the back. Sometimes this pressure must be considerable, but the oviduct will be everted with much less pressure if it is applied quickly than if it is applied slowly. No harm to the birds has been observed even when great pressure was necessary. The injection of semen in the turkeys is made the same as in chickens.

The recommended procedure for chickens is the insemination with 0.1 c c of semen once a week. If properly done this should yield from 80 to 90 percent fertility. However, since the fertility of different matings varies somewhat with the same type of treatment, it may be necessary to use more semen or to inseminate more often, or it may be possible to obtain good results with less. Good fertility has been obtained in some matings with 0.05 c c of semen once a week, and with 0.1 c c of semen once in ten days. The dosage must be determined on the basis of results.

With chickens the best fertility is obtained when semen is used as soon as it has been collected, i.e., within an hour. However, as much as 50 percent fertility may be obtained with semen kept for several hours if it has been stored in a cool place (50 to 60 degrees F.)

Excellent fertility has been obtained from turkeys with 0.05 c c of semen. Hens that become fertile with this amount may retain their fertility for three to four weeks. However, all turkey hens do not become fertile as the result of a single insemination. A good routine procedure is to inseminate with 0.05 c c of semen at least twice within a few days and repeat this process every three weeks. From 80 to 90 percent fertility may be expected from this procedure.

Some hens, chickens as well as turkeys, do not become fertile even with the most careful and persistent inseminations. If a record is kept so that these hens are not used as breeders, a higher rate of fertility can be obtained from the flock.